

Claims

1. A media compression method comprising:
obtaining a media signal to be communicated to a destination system;
identifying a plurality of scenes within the media signal;
compressing the plurality of scenes with a codec supporting multiple
compression methods, wherein the codec automatically selects different
compression methods to respectively compress at least two of the scenes,
wherein the compression methods are automatically selected to produce a
highest compression quality for the respective scenes according to a set
of criteria without exceeding a target data rate; and
delivering the compressed scenes to the destination system with an indication of
which compression method was used by the codec to compress each
scene.
2. The method of claim 1, wherein the compression methods are selected from the
group consisting of discrete cosine transform (DCT), fractal, and wavelet compression
methods.
3. The method of claim 1, wherein a first automatically-selected compression
method comprises a discrete cosine transform (DCT) method and a second
automatically-selected compression method comprises a fractal method.

4. The method of claim 1, wherein a first automatically-selected compression method comprises a discrete cosine transform (DCT) method and a second automatically-selected compression method comprises a wavelet method.
5. The method of claim 1, wherein automatically selecting further comprises:
identifying a plurality of characteristics of a scene; and
searching for a compression method that is associated with the identified characteristics of the scene.
6. The method of claim 5, wherein the characteristics are selected from the group consisting of motion characteristics and color characteristics.
7. The method of claim 6, wherein searching further comprises using an Artificial Intelligence (AI) system to locate a compression method associated with the identified characteristics of a scene.
8. The method of claim 7, wherein the AI system comprises a neural network.
9. The method of claim 7, wherein the AI system comprises an expert system.
10. The method of claim 1, wherein automatically selecting further comprises:
testing at least a subset of the compression methods on a scene; and

automatically selected the compression method that produces a highest compression quality for the scene according to a set of criteria without exceeding the target data rate.

11. The method of claim 10, wherein testing further comprises:
storing a baseline snapshot of the scene; and
for each compression method to be tested:
compressing the scene at or below the target data rate using one of the
compression methods in the library;
decompressing the scene using a corresponding decompression method;
and
comparing the quality of the decompressed scene with the baseline
snapshot according to the set of criteria.
12. The method of claim 11, wherein comparing further comprises comparing the
quality according to a Peak Signal to Noise Ratio (PSNR).
13. The method of claim 11, wherein comparing further comprises comparing the
quality according to a Just Noticeable Difference (JND) value.
14. The method of claim 11, further comprising:
identifying a plurality of characteristics of a scene; and

associating the identified characteristics of the scene with the automatically-selected compression method.

15. The method of claim 10, wherein testing at least a subset of the compression methods comprises testing a plurality of compressions methods concurrently using a plurality of separate processors.

16. The method of claim 15, wherein the number of processors at least equals the number of compression methods to be tested.

17. The method of claim 10, wherein each compression method is tested within a separate processing thread of a multiprocessing operating system.

18. The method of claim 5, wherein searching further comprises searching for an association between the identified characteristics and a set of parameters to be used with the automatically-selected compression method;

wherein compressing further comprises compressing the scene using the automatically-selected compression method with the associated set of parameters; and

wherein delivering further comprises delivering the compressed scene to the destination system with an indication of which compression method and which set of parameters were used to compress the scene.

19. The method of claim 10, wherein testing further comprises testing compression methods on the scene using different sets of parameters and automatically selecting the compression method and set of parameters that produce a highest compression quality for the scene according to a set of criteria without exceeding the target data rate;

wherein compressing further comprises compressing the scene using the automatically-selected compression method with the automatically-selected parameters; and

wherein delivering further comprises delivering the compressed scene to the destination system with an indication of which compression method and set of parameters were used to compress the scene.

20. The method of claim 19, further comprising:

identifying a plurality of characteristics of a scene; and

associating the automatically-selected compression method and the

automatically-selected set of parameters with the identified characteristics of the scene.

21. The method of claim 1, wherein identifying further comprises detecting a scene change in response to one frame of the media signal being sufficiently different from a previous frame.

22. The method of claim 1, wherein identifying further comprises detecting a scene change in response to the passage of a fixed period of time.

23. The method of claim 1, wherein delivering further comprises streaming each compressed scene to the destination system through a network.
24. The method of claim 1, wherein delivering further comprises storing each compressed scene on a storage medium.
25. The method of claim 1, wherein at least one compression method has an associated licensing cost, and wherein selecting further comprises automatically selecting the compression method having the least licensing cost in response to two or more compression methods producing substantially the same quality of compressed output for a scene.
26. A media compression method comprising:
- obtaining a media signal to be communicated to a destination system;
 - automatically selecting different compression methods to respectively compress
 - at least two of the segments of the media signal, wherein the compression methods are automatically selected to produce a highest compression quality for the respective segments without exceeding a target data rate;
 - compressing the segments using the automatically-selected compression methods; and
 - delivering the compressed segments to the destination system with an indication of which compression method was used to compress each segment.

27. A media compression method comprising:
- providing a library of compression methods, at least one compression method having an associated licensing cost;
 - obtaining a media signal to be communicated to a destination system;
 - identifying a plurality of scenes within the media signal;
 - automatically selecting different compression methods from the library to respectively compress at least two of the scenes, wherein the compression methods are automatically selected to produce a highest compression quality at the lowest licensing cost for the respective scenes according to a set of criteria without exceeding a target data rate;
 - compressing the scenes using the automatically-selected compression methods;
 - and
 - delivering the compressed scenes to the destination system with an indication of which compression method was used to compress each scene.

28. A method for communicating a media signal comprising:
selectively compressing at least two scenes of a media signal using different
compression methods available within a single codec, wherein the
compression methods are automatically selected to produce a highest
compression quality for the respective scenes according to a set of criteria
without exceeding a target data rate; and
delivering each compressed scene to a destination system with an indication of
which compression method was used by the codec to compress each
scene.
29. A media decompression method comprising:
receiving a media signal comprising a first scene compressed using a first
compression method of a codec and a second scene compressed using a
second compression method of the same codec, wherein the first and
second codecs are automatically selected based on which compression
method produces a highest compression quality for each scene according
to a set of criteria without exceeding a target data rate;
receiving an indication of which compression method was used to compress
each scene;
decompressing the first scene using the first indicated compression method; and
decompressing the second scene using the second indicated compression
method.

30. The method of claim 29, further comprising presenting the first and second decompressed scenes to a user.

31. A media compression system comprising:

an input module to obtain a media signal to be communicated to a destination system;

an identification module to identify a plurality of scenes within the media signal;

a codec to automatically select different compression methods to respectively compress at least two of the scenes, wherein the compression methods are automatically selected to produce a highest compression quality for the respective scenes according to a set of criteria without exceeding a target data rate, and wherein the codec is to compress the scenes using the automatically-selected compression methods; and

an output module to deliver the compressed scenes to the destination system with an indication of which compression method was used to compress each scene.

32. The system of claim 31, wherein the compression methods are automatically selected from the group consisting of discrete cosine transform (DCT), fractal, and wavelet compression methods.

33. The system of claim 31, wherein a first automatically-selected compression method comprises a discrete cosine transform (DCT) method and a second automatically-selected compression method comprises a fractal method.
34. The system of claim 31, wherein a first automatically-selected compression method comprises a discrete cosine transform (DCT) method and a second automatically-selected compression method comprises a wavelet method.
35. The system of claim 31, wherein the identification module is to identify a plurality of characteristics of a scene; and
wherein the codec is to search for a compression method that is associated with the identified characteristics of the scene.
36. The system of claim 35, wherein the characteristics are selected from the group consisting of motion characteristics and color characteristics.
37. The system of claim 36, wherein the codec comprises an Artificial Intelligence (AI) system to locate a compression method associated with the identified characteristics of a scene.
38. The system of claim 37, wherein the AI system comprises a neural network.
39. The system of claim 37, wherein the AI system comprises an expert system.

40. The system of claim 31, wherein the codec is to test at least a subset of the compression methods on a scene and automatically select the compression method that produces a highest compression quality for the scene according to a set of criteria without exceeding the target data rate.

41. The system of claim 40, wherein the codec is to store a baseline snapshot of the scene and, for each compression method to be tested, have the scene compressed at or below the target data rate using one of the compression methods in the library, have the scene decompressed using a corresponding decompression method, and compare the quality of the decompressed scene with the baseline snapshot according to the set of criteria.

42. The system of claim 41, wherein the codec is to compare the quality according to a Peak Signal to Noise Ratio (PSNR).

43. The system of claim 41, wherein the codec is to compare the quality according to a Just Noticeable Difference (JND) value.

44. The system of claim 41, wherein the identification module is to identify a plurality of characteristics of a scene; and

wherein the codec is to associate the identified characteristics of the scene with the automatically-selected compression method.

45. The system of claim 40, wherein the codec is to test at least a subset of the compression methods concurrently using a plurality of separate processors.
46. The system of claim 45, wherein the number of processors at least equals the number of compression methods to be tested.
47. The system of claim 40, wherein the codec is to test each compression method within a separate processing thread of a multiprocessing operating system.
48. The system of claim 35, wherein the codec is to search for an association between the identified characteristics and a set of parameters to be used with the automatically-selected compression method;
- wherein the compression module is to compress the scene using the
- automatically-selected compression method with the associated set of
- parameters; and
- wherein the output module is to deliver the compressed scene to the destination
- system with an indication of which compression method and which set of
- parameters were used to compress the scene.
49. The system of claim 40, wherein the codec is to test the compression methods on the scene using different sets of parameters and automatically select the

compression method and set of parameters that produce a highest compression quality for the scene according to a set of criteria without exceeding the target data rate;

wherein the compression module is to compress the scene using the
automatically-selected compression method with the automatically-
selected parameters; and

wherein the output module is to deliver the compressed scene to the destination
system with an indication of which compression method and set of
parameters were used to compress the scene.

50. The system of claim 49, wherein the identification module is to identify a plurality of characteristics of a scene; and

wherein the codec is to associate the automatically-selected compression
method and the automatically-selected set of parameters with the
identified characteristics of the scene.

51. The system of claim 31, wherein the identification module is to detect a scene change in response to one frame of the media signal being sufficiently different from a previous frame.

52. The system of claim 31, wherein the identification module is to detect a scene change in response to the passage of a fixed period of time.

53. The system of claim 31, wherein the output module is to stream each compressed scene to the destination system through a network.
54. The system of claim 31, wherein the output module is to store each compressed scene on a storage medium.
55. The system of claim 31, wherein at least one compression method has an associated licensing cost, and wherein the codec is to automatically select the compression method having the least licensing cost in response to two or more compression methods producing substantially the same quality of compressed output for a scene.
56. A media compression system comprising:
an input module to obtain a media signal to be communicated to a destination system;
a codec to test multiple compression methods on each of a plurality of segments of a media signal, wherein the codec is to automatically select different compression methods to respectively compress at least two segments in order to produce a highest compression quality for the respective segments without exceeding a target data rate, and wherein the codec is to compress the segments using the automatically-selected compression methods; and

an output module to deliver the compressed segments to the destination system
with an indication of which codec was used to compress each segment.

57. The system of claim 56, wherein the codec is to test at least a subset of the compression methods concurrently using a plurality of separate processors.

58. The system of claim 57, wherein the number of processors at least equals the number of compression methods to be tested.

59. The system of claim 56, wherein the codec is to test each compression method within a separate processing thread of a multiprocessing operating system.

60. A codec for compressing a media signal comprising:
a selection module for automatically selecting different compression methods to respectively compress at least two scenes of a media signal, wherein the compression methods are automatically selected to produce a highest compression quality for the respective scenes according to a set of criteria without exceeding a target data rate; and
a compression module for compressing the scenes using the automatically-selected compression methods.

61. The codec of claim 60, wherein the selection module is to test at least a subset of the codecs concurrently using a plurality of separate processors.
62. The codec of claim 61, wherein the number of processors at least equals the number of methods to be tested.
63. The codec of claim 60, wherein the selection module is to test each codec within a separate processing thread of a multiprocessing operating system.